

1. Using an interval or intervals, describe all the  $x$ -values within or including a distance of the given values.

Less than 9 units from the number 7.

- A.  $(2, 16)$
  - B.  $(-\infty, 2] \cup [16, \infty)$
  - C.  $(-\infty, 2) \cup (16, \infty)$
  - D.  $[2, 16]$
  - E. None of the above
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2. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-8x + 5 > -3x - 8$$

- A.  $(-\infty, a)$ , where  $a \in [-5.6, -1.6]$
  - B.  $(a, \infty)$ , where  $a \in [-6.6, 0.4]$
  - C.  $(-\infty, a)$ , where  $a \in [-0.4, 8.6]$
  - D.  $(a, \infty)$ , where  $a \in [-2.4, 5.6]$
  - E. None of the above.
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3. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$5 - 4x < \frac{-19x - 6}{8} \leq 5 - 3x$$

- A.  $(-\infty, a] \cup (b, \infty)$ , where  $a \in [3, 5.25]$  and  $b \in [8.25, 11.25]$
- B.  $(-\infty, a) \cup [b, \infty)$ , where  $a \in [1.5, 7.5]$  and  $b \in [8.25, 12.75]$
- C.  $(a, b]$ , where  $a \in [0.75, 7.5]$  and  $b \in [9, 13.5]$
- D.  $[a, b)$ , where  $a \in [1.5, 7.5]$  and  $b \in [5.25, 13.5]$

E. None of the above.

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4. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-9 + 7x \leq \frac{46x + 5}{6} < -3 + 7x$$

- A.  $(a, b]$ , where  $a \in [13.5, 17.25]$  and  $b \in [-0.75, 10.5]$   
B.  $[a, b)$ , where  $a \in [12, 22.5]$  and  $b \in [4.5, 6.75]$   
C.  $(-\infty, a) \cup [b, \infty)$ , where  $a \in [9.75, 15.75]$  and  $b \in [3, 7.5]$   
D.  $(-\infty, a] \cup (b, \infty)$ , where  $a \in [9.75, 16.5]$  and  $b \in [-1.5, 6.75]$   
E. None of the above.
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5. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{5}{5} - \frac{6}{8}x > \frac{10}{4}x + \frac{9}{2}$$

- A.  $(-\infty, a)$ , where  $a \in [-3, -0.75]$   
B.  $(-\infty, a)$ , where  $a \in [0, 3.75]$   
C.  $(a, \infty)$ , where  $a \in [-3.75, 0.75]$   
D.  $(a, \infty)$ , where  $a \in [0, 3.75]$   
E. None of the above.
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6. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-8 + 6x > 8x \text{ or } 4 + 6x < 8x$$

- A.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-2.25, 3]$  and  $b \in [3, 4.35]$   
B.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-11.25, -3]$  and  $b \in [1.88, 2.92]$

- C.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-4.2, -2.17]$  and  $b \in [0.6, 2.7]$   
D.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-3.45, -0.22]$  and  $b \in [2.4, 4.35]$   
E.  $(-\infty, \infty)$
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7. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{7}{7} + \frac{4}{9}x > \frac{5}{4}x - \frac{4}{6}$$

- A.  $(a, \infty)$ , where  $a \in [-5.25, 0]$   
B.  $(a, \infty)$ , where  $a \in [1.5, 3.75]$   
C.  $(-\infty, a)$ , where  $a \in [0.75, 2.25]$   
D.  $(-\infty, a)$ , where  $a \in [-5.25, 0]$   
E. None of the above.
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8. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-3 + 4x > 5x \text{ or } -4 + 4x < 7x$$

- A.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [0, 2.25]$  and  $b \in [0, 4.5]$   
B.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-4.5, -0.75]$  and  $b \in [-1.43, 0.9]$   
C.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-4.5, -2.25]$  and  $b \in [-2.25, 1.5]$   
D.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [0, 7.5]$  and  $b \in [0.15, 3.82]$   
E.  $(-\infty, \infty)$
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9. Using an interval or intervals, describe all the  $x$ -values within or including a distance of the given values.

No more than 4 units from the number 8.

- A.  $(-\infty, -4) \cup (12, \infty)$
  - B.  $[-4, 12]$
  - C.  $(-\infty, -4] \cup [12, \infty)$
  - D.  $(-4, 12)$
  - E. None of the above
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10. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-4x + 9 < 3x - 3$$

- A.  $(-\infty, a)$ , where  $a \in [0.9, 2.2]$
  - B.  $(a, \infty)$ , where  $a \in [-5.71, 1.29]$
  - C.  $(-\infty, a)$ , where  $a \in [-2.4, 0.2]$
  - D.  $(a, \infty)$ , where  $a \in [1.71, 6.71]$
  - E. None of the above.
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11. Using an interval or intervals, describe all the  $x$ -values within or including a distance of the given values.

No less than 2 units from the number 9.

- A.  $(7, 11)$
  - B.  $[7, 11]$
  - C.  $(-\infty, 7) \cup (11, \infty)$
  - D.  $(-\infty, 7] \cup [11, \infty)$
  - E. None of the above
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12. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$4x + 5 \leq 5x - 8$$

- A.  $[a, \infty)$ , where  $a \in [12, 14]$
  - B.  $[a, \infty)$ , where  $a \in [-16, -12]$
  - C.  $(-\infty, a]$ , where  $a \in [-15, -12]$
  - D.  $(-\infty, a]$ , where  $a \in [6, 15]$
  - E. None of the above.
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13. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-4 - 6x < \frac{-46x + 8}{8} \leq -7 - 8x$$

- A.  $(-\infty, a) \cup [b, \infty)$ , where  $a \in [-25.5, -17.25]$  and  $b \in [-5.25, -1.5]$
  - B.  $[a, b)$ , where  $a \in [-21, -15.75]$  and  $b \in [-4.5, 0.75]$
  - C.  $(-\infty, a] \cup (b, \infty)$ , where  $a \in [-21, -18]$  and  $b \in [-6, -3]$
  - D.  $(a, b]$ , where  $a \in [-21.75, -16.5]$  and  $b \in [-6.75, -0.75]$
  - E. None of the above.
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14. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-6 + 8x \leq \frac{26x - 9}{3} < 4 + 4x$$

- A.  $(-\infty, a) \cup [b, \infty)$ , where  $a \in [-9.75, -1.5]$  and  $b \in [-0.75, 5.25]$
  - B.  $(a, b]$ , where  $a \in [-5.25, -0.75]$  and  $b \in [-0.75, 9.75]$
  - C.  $[a, b)$ , where  $a \in [-5.25, -2.25]$  and  $b \in [0.22, 1.72]$
  - D.  $(-\infty, a] \cup (b, \infty)$ , where  $a \in [-7.5, -3]$  and  $b \in [1.05, 1.8]$
  - E. None of the above.
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15. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{9}{8} + \frac{4}{7}x \leq \frac{7}{3}x - \frac{3}{4}$$

- A.  $[a, \infty)$ , where  $a \in [0, 2.25]$
  - B.  $[a, \infty)$ , where  $a \in [-4.5, 0]$
  - C.  $(-\infty, a]$ , where  $a \in [-4.5, 0.75]$
  - D.  $(-\infty, a]$ , where  $a \in [0.75, 2.25]$
  - E. None of the above.
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16. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-7 + 3x > 5x \text{ or } 7 + 5x < 8x$$

- A.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-4.65, -2.4]$  and  $b \in [1.95, 2.48]$
  - B.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-3.96, -3.48]$  and  $b \in [1.74, 3.01]$
  - C.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-2.75, -2.24]$  and  $b \in [3.05, 4.35]$
  - D.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-3, -1.12]$  and  $b \in [3.15, 5.77]$
  - E.  $(-\infty, \infty)$
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17. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{-8}{7} - \frac{5}{8}x \leq \frac{5}{6}x + \frac{8}{9}$$

- A.  $(-\infty, a]$ , where  $a \in [0, 4.5]$
- B.  $[a, \infty)$ , where  $a \in [0.75, 2.25]$
- C.  $[a, \infty)$ , where  $a \in [-2.25, 0.75]$
- D.  $(-\infty, a]$ , where  $a \in [-2.25, 0.75]$

E. None of the above.

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18. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-7 - 3x > 4x \text{ or } 6 + 9x < 10x$$

- A.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-8.25, -4.5]$  and  $b \in [-0.75, 3.75]$   
B.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-3.75, 0]$  and  $b \in [1.5, 8.25]$   
C.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-9.75, -3]$  and  $b \in [0, 4.5]$   
D.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-5.25, 2.25]$  and  $b \in [3.75, 9]$   
E.  $(-\infty, \infty)$
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19. Using an interval or intervals, describe all the  $x$ -values within or including a distance of the given values.

No more than 5 units from the number 4.

- A.  $[-1, 9]$   
B.  $(-1, 9)$   
C.  $(-\infty, -1) \cup (9, \infty)$   
D.  $(-\infty, -1] \cup [9, \infty)$   
E. None of the above
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20. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-8x - 3 \leq 5x + 4$$

- A.  $[a, \infty)$ , where  $a \in [0.06, 1.26]$   
B.  $[a, \infty)$ , where  $a \in [-1.23, -0.26]$   
C.  $(-\infty, a]$ , where  $a \in [-1.54, 0.46]$

D.  $(-\infty, a]$ , where  $a \in [-0.46, 5.54]$

E. None of the above.

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21. Using an interval or intervals, describe all the  $x$ -values within or including a distance of the given values.

More than 3 units from the number  $-8$ .

A.  $(-\infty, -11) \cup (-5, \infty)$

B.  $[-11, -5]$

C.  $(-11, -5)$

D.  $(-\infty, -11] \cup [-5, \infty)$

E. None of the above

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22. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-10x - 6 > 5x + 8$$

A.  $(a, \infty)$ , where  $a \in [-2.97, 0.39]$

B.  $(-\infty, a)$ , where  $a \in [-2.93, 0.07]$

C.  $(a, \infty)$ , where  $a \in [0.36, 1.26]$

D.  $(-\infty, a)$ , where  $a \in [0.93, 5.93]$

E. None of the above.

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23. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-8 - 9x < \frac{-30x - 3}{8} \leq 9 - 4x$$

A.  $(-\infty, a) \cup [b, \infty)$ , where  $a \in [-0.75, 2.25]$  and  $b \in [-38.25, -31.5]$



- B.  $(a, b]$ , where  $a \in [0.75, 3]$  and  $b \in [-38.25, -36]$
  - C.  $(-\infty, a] \cup (b, \infty)$ , where  $a \in [1.2, 4.58]$  and  $b \in [-39.75, -36]$
  - D.  $[a, b)$ , where  $a \in [0, 3]$  and  $b \in [-38.25, -33.75]$
  - E. None of the above.
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24. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$7 - 6x \leq \frac{-40x - 6}{9} < 5 - 5x$$

- A.  $(a, b]$ , where  $a \in [-8.25, -1.5]$  and  $b \in [-12, -6.75]$
  - B.  $(-\infty, a] \cup (b, \infty)$ , where  $a \in [-9, 1.5]$  and  $b \in [-10.5, -8.25]$
  - C.  $(-\infty, a) \cup [b, \infty)$ , where  $a \in [-5.25, 0]$  and  $b \in [-12, -8.25]$
  - D.  $[a, b)$ , where  $a \in [-9, -2.25]$  and  $b \in [-12, -8.25]$
  - E. None of the above.
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25. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{9}{2} + \frac{4}{3}x \leq \frac{9}{6}x + \frac{4}{5}$$

- A.  $[a, \infty)$ , where  $a \in [-23.25, -19.5]$
  - B.  $[a, \infty)$ , where  $a \in [21, 23.25]$
  - C.  $(-\infty, a]$ , where  $a \in [-24, -21]$
  - D.  $(-\infty, a]$ , where  $a \in [20.25, 24.75]$
  - E. None of the above.
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26. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-4 + 4x > 5x \text{ or } -6 + 9x < 12x$$

- A.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-0.75, 5.25]$  and  $b \in [-0.75, 8.25]$
  - B.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-6, -2.25]$  and  $b \in [-9.75, -0.75]$
  - C.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-2.25, 6]$  and  $b \in [3, 7.5]$
  - D.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-5.25, -0.75]$  and  $b \in [-3.75, -1.5]$
  - E.  $(-\infty, \infty)$
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27. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{-10}{4} - \frac{10}{9}x \leq \frac{-5}{8}x - \frac{5}{7}$$

- A.  $[a, \infty)$ , where  $a \in [-7.5, 0]$
  - B.  $[a, \infty)$ , where  $a \in [3, 5.25]$
  - C.  $(-\infty, a]$ , where  $a \in [1.5, 6]$
  - D.  $(-\infty, a]$ , where  $a \in [-4.5, -2.25]$
  - E. None of the above.
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28. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$7 + 5x > 6x \text{ or } 9 + 9x < 10x$$

- A.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [-12.75, -4.5]$  and  $b \in [-7.5, -3]$
  - B.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [-14.25, -6]$  and  $b \in [-10.5, -3]$
  - C.  $(-\infty, a) \cup (b, \infty)$ , where  $a \in [4.5, 9]$  and  $b \in [6.75, 10.5]$
  - D.  $(-\infty, a] \cup [b, \infty)$ , where  $a \in [2.25, 9]$  and  $b \in [6.75, 12.75]$
  - E.  $(-\infty, \infty)$
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29. Using an interval or intervals, describe all the  $x$ -values within or including a distance of the given values.

More than 10 units from the number  $-9$ .

- A.  $(-\infty, -19) \cup (1, \infty)$
- B.  $(-\infty, -19] \cup [1, \infty)$
- C.  $[-19, 1]$
- D.  $(-19, 1)$
- E. None of the above

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30. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-10x + 7 \leq 5x - 10$$

- A.  $[a, \infty)$ , where  $a \in [-2, -0.8]$
  - B.  $(-\infty, a]$ , where  $a \in [-1.7, -1]$
  - C.  $[a, \infty)$ , where  $a \in [-1.1, 3.8]$
  - D.  $(-\infty, a]$ , where  $a \in [0.4, 1.4]$
  - E. None of the above.
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